

ADDITIONS TO THE ERICACEAE OF PANAMA¹

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ABSTRACT

The following taxa of Ericaceae are newly described from Panama: *Cavendishia aberrans* Luteyn, *C. arizonensis* Luteyn, *C. chiriquiensis* var. *bullata* Luteyn, *C. fortunensis* Luteyn, *Didonica panamensis* Luteyn & Wilbur, *Disterigma hammelii* Wilbur & Luteyn, *Lateropora tubulifera* Wilbur & Luteyn, *Macleania megabracteata* Wilbur & Luteyn and *Themistoclesia revoluta* Wilbur & Luteyn. *Cavendishia quereme* (H.B.K.) Bentham & Hooker is reported for the first time from Panama, being previously known only from Costa Rica and Colombia. *Vaccinium dissimile* Blake is now known from Colón Province and the range of *Vaccinium jefense* Luteyn & Wilbur is extended to include Coclé Province. Keys to the Central American representatives of the genera *Disterigma*, *Lateropora*, and *Themistoclesia* are provided.

It may be surprising to many that, although an account of the Ericaceae of Panama was published only recently (Wilbur & Luteyn, 1978) based upon a study of all collections available in the American herbaria with significant holdings of Panamanian plants, a paper would be published so soon increasing by 15% the known ericad flora of that small county. All of these additions are based upon collections previously unavailable to us, and almost all are from collections made in only recently explored areas. It is safe to predict that many additional species await discovery in the extensive areas of Panama that are botanically either unexplored or little explored, and it is to be hoped that funds for continued exploration will be forthcoming. Obviously the botanical exploration of this biogeographically critical area is far from completed.

***Cavendishia aberrans* Luteyn, sp. nov.**

Frutex epiphyticus. Folia ovato-lanceolata, 13–15 cm longa, 4.5–6 cm lata; petioli 15–17 mm longi. Inflorescentia racemosa, floribus 20; rhachides 12 cm longae; bracteae florales oblongae, 7–10 mm longae; pedicelli 19–20 mm longi. Calyx 6–7 mm longus; lobi calycis 1 mm longi callosos-incrassati. Corolla 41–43 mm longa. Stamina 34–36 mm longa, filamentis alternatim 1–2 mm et 5–6 mm longis, antheris tubulis inclusis alternatim 29–30 mm et 33–35 mm longis, poris 3 mm longis.

Epiphytic *shrub*; mature branches subterete, bluntly angled, glabrous, brown when dry. *Leaves* ovate-lanceolate, 13–15 cm long, 4.5–6 cm broad, basally obtuse, apically long but broadly acuminate, tan or olive brown when dry, glabrous, the margins slightly revolute, 3-plinerved, the nerves arising from the base, the midrib impressed above and raised beneath, the lateral veins plane above and raised beneath, the veinlets reticulate and slightly raised on both surfaces; petioles subterete, rugose, 15–17 mm long, 2.5 mm in diameter, glabrous, glaucous. *Inflorescence* viscid, 20-flowered, the lowest 3–4 floral bracts sterile; rachis 12 cm long, 3.5 mm in diameter at the base, bluntly angled, glabrous but with scattered

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globular glands; floral bracts conspicuously striate, oblong, basally truncate, apically rounded, 7–10 mm long, 5–6 mm broad, each margin with 10–20 angular or globular sessile glands, some of these often caducous; pedicels subterete, glabrous, 19–20 mm long, 1–1.2 mm in diameter, “purple,” provided at the distal tip with 6–8 flesh-colored ovoid-angular short-stipitate glands each less than 0.5 mm in diameter; bracteoles continuous (not articulate) with the pedicel, subopposite, ovate, 1.5 mm long, ca. 1 mm broad at the base, the margins completely callose thickened. *Flowers* with the calyx glabrous, 6–7 mm long, the hypanthium 2 mm long, capanulate, 5 (weakly 10)-ribbed, basally apophysate with the rim undulate or turned upward, “purple,” the limb spreading, noticeably constricted at the base, “green,” 3–4 mm long, the lobes triangular, obtuse, 1 mm long, ca. 3 mm wide at the base, erect after anthesis, completely callose thickened without and onto the limb, only the margins callose thickened within, the sinuses flat or broadly rounded; corolla glabrous, 41–43 mm long, 6 mm in diameter, “waxy red,” the lobes triangular, obtuse, 2 mm long; stamens of equal length overall, 34–36 mm long, the filaments pilose along the margins and inner surfaces, alternately 1–2 mm and 5–6 mm long, the anthers including the tubules alternately 29–30 mm and 33–35 mm long, the thecae 5–6 mm and 6–6.5 mm long, the tubules apically dehiscent by short clefts ca. 3 mm long with ragged and slightly flaring margins; style sigmoid, glabrous, 42–45 mm long. *Berry* not seen.

TYPE: PANAMA. COCLÉ: Near saw mill 8 km N of El Copé, 28 km NW of Penonomé, very wet cloud forest, 600–750 m, 9 Jan. 1977, *Maas, Berg & Dressler 2774* (U, holotype, photo NY).

Cavendishia aberrans is isolated within the genus, differing from all other species by its extremely long anther tubules and short dehiscence clefts. Species of *Cavendishia* usually have anther tubules and thecae of approximately equal length; however, the new species has tubules six times longer than the thecae. Also, species of *Cavendishia* normally have dehiscence clefts about half the tubule length; the new species has clefts only 3 mm long, being $\frac{1}{8}$ – $\frac{1}{9}$ the length of the tubules.

In the long tubules in relation to the thecae and short dehiscence clefts, *Cavendishia aberrans* resembles the genus *Plutarchia* A. C. Smith, an Andean genus of Colombia, which may thus strengthen an already suspected relationship between these genera. Species of *Plutarchia* may have filaments of alternate lengths, although only slightly unequal, and floral bracts which reach 10 mm, thus superficially resembling *Cavendishia*. However, the floral bracts of *Plutarchia* are never showy. *Plutarchia* also differs in consistently smaller leaves (with only one exception leaves are less than 5 cm long); calyx hypanthia which are often angled or winged (never in *Cavendishia*) and never apophysate (common in *Cavendishia*); and most important, in the lack of development of the various types of glands on the calyces and bracts of so many cavendishias.

***Cavendishia arizonensis* Luteyn, sp. nov.**

Folia elliptica, ovato-elliptica vel obovata, 7–13.5 cm longa, 2–6 cm lata, bullata; petioli 7 mm longi. Inflorescentia racemosa, floribus 82; rhachides 27 cm longae; bracteae florales oblongae, 17–22 mm longae; pedicelli 12–15 mm longi. Calyx glaber, hypanthio dense glanduloso, nonapophysato;

limbus campanulatus, lobis calloso-incrassatis et glandulosis secus margines inclusis 3.5–4 mm longus. Corolla immatura.

Shrub; mature branches subterete, striate, glabrous, yellowish brown when dry, with minute, black stipitate, globular glands ca. 0.1 mm in diameter. *Leaves* elliptic, ovate-elliptic to sometimes obovate, 7–13.5 cm long, 2–6 cm broad, basally cuneate, apically acute or short acuminate, olive brown above and tan beneath when dry, glabrous but with scattered, elevated, reddish globular glands 0.1 mm in diameter along the upper surface, and scattered red glandular fimbriae on the lower surface, 5-plinerved, the veins all arising from the base, the midrib and lateral nerves deeply and conspicuously impressed above, raised beneath causing the leaves to be longitudinally compressed and bullate, the veinlets impressed above, raised beneath; petioles subterete, flattened above, rugose, ca. 7 mm long, 4 mm in diameter, glabrous. *Inflorescence* racemose, viscid, 82-flowered; rachis subterete, bluntly angled, glabrous, 27 cm long, 6 mm in diameter at the base, the proximal 9–10 cm densely provided with globular glands, the distal portion without glands; floral bracts glabrous, oblong, 17–22 mm long, ca. 11 mm broad, basally clasping, apically rounded, marginally with a few globular glands; pedicels subterete, bluntly angled or striate, glabrous, 12–15 mm long, 1.5–2 mm in diameter, with scattered globular glands 0.2–0.3 mm in diameter, especially at the distal tip; bracteoles basal, broadly ovate, ca. 4 mm long, 3.5 mm broad, marginally glandular callose-thickened at the distal tip and flanked by oblong callose thickenings on each side (not globular glands). *Flowers* with the calyx glabrous, viscid, 6–6.5 mm long, the hypanthium cylindrical, rugose, 2.5 mm long, basally nonapophysate, covered by globular, angular glands to 0.5 mm in diameter, the limb campanulate, 3.5–4 mm long including the lobes, without glands, the lobes triangular, 1.5 mm long, marginally glandular callose-thickened, the sinuses broadly rounded; corolla immature, cylindrical, 18 mm long, 5–6 mm in diameter, “lavender,” pilose, the distal third especially dense near the tip; stamens equal, 16 mm long, the filaments distinct, alternately 2 mm and 5 mm long, short pilose on the ventral side of the distal half, the anthers including the tubules alternately 12 mm and 15 mm long, the thecae 6 mm long, the dehiscence clefts 5 mm long; style 17 mm long. *Berry* not seen.

TYPE: PANAMA. VERAGUAS: N of Santa Fé, summit of Cerro Arizona, heath-like terrain formed by the dense crowns of elfin forest trees, 4700 ft, 10 Sep. 1978, *Hammel 4733* (MO, holotype).

In Wilbur & Luteyn (1978) *Cavendishia arizonensis* keys to *C. panamensis* to which it is most closely related. However, the differences, in combination, make the new species a very distinctive plant. *Cavendishia arizonensis* has a longer rachis (27 cm vs. 8–17 cm) with many more flowers (82 vs. 11–37); shorter floral bracts (17–22 mm vs. 20–50 mm), pedicels (10–15 mm vs. 11–19 mm) and corollas (18–20 mm vs. 25–35 mm); bracteoles with callose-thickened glands (not globular glands); and leaves which are strikingly bullate and have short acute tips (not flat and long acuminate to caudate-acuminate). Also, in *C. panamensis*, the floral bracts are proportionally longer covering the pedicels, calyx and lower half of the corolla at anthesis, whereas they cover only the pedicels and calyx in the new species. One other interesting note about the new species is that the inflo-

rescence and especially the calyces are covered by dead ants or ant-body parts. This is probably the result of ants being attracted to the glandular exudate (for feeding purposes?) and then getting stuck and being unable to escape the highly sticky substance. This phenomenon is frequently observed on species of *Cavendishia* which secrete a viscid latex (e.g., *C. lactiviscida*, *C. ciliata*, *C. panamensis*, etc.).

***Cavendishia chiriquiensis* var. *bullata* Luteyn, var. nov.**

A var. *chiriquiensis* foliis valde bullatis, rhachidibus longioribus, bracteolarum et hypanthii forma, corollarum pubescentia, et distributione geographica differt.

TYPE. PANAMA. COCLÉ: 7 km N of El Copé, near Rivera Sawmill, 70–850 m, 10 Sep. 1977, *Folsom 5239* (MO, holotype).

Other Specimens Examined: PANAMA. CHIRIQUÍ: Cerro Colorado, road along top, 1500–1750 m, *Folsom et al. 4694* (MO). Cerro Colorado, cloud forest on continental divide, 1200–1500 m, *Mori & Dressler 7786* (MO, NY). 28 km from Río San Félix bridge, 1500 m, *Sullivan 280* (DUKE, MO).

Cavendishia chiriquiensis A. C. Smith has been collected from three geographically and altitudinally separated areas—the Boquete region at 1,700–1,900 m (type location of var. *chiriquiensis*), the Cerro Colorado area at 1,200–1,750 m, and now the region of El Copé at 700–850 m.

Cavendishia chiriquiensis var. *bullata* is restricted to Cerro Colorado and El Copé and differs from the typical variety primarily in the characters mentioned in the diagnosis and in several supporting character-features noted in Table 1. The Cerro Colorado populations themselves are somewhat intermediate in leaf size, shape and venation, in rachis length, in floral bract length, in calyx lobes, and in corolla pubescence. However, the overriding characters of bullate leaves and the usually longer rachises give it and the El Copé population a very different appearance, and one which merits varietal recognition.

One collection of var. *bullata* from Cerro Colorado, *Mori & Dressler 7786*, was annotated as *C. chiriquiensis* in 1976 and was so cited in the treatment for the *Flora of Panama* (Wilbur & Luteyn, 1978). Many more collections of both varieties are needed from areas between Boquete, Cerro Colorado and El Copé to understand the variation which is only now coming to light.

***Cavendishia fortunensis* Luteyn, sp. nov.**

Frutex epiphyticus. Folia elliptica, (5–)7–11 cm longa, 2–4 cm lata; petioli 3–5 mm longi. Inflorescentia racemosa, floribus 20; rhachides 11 cm longae; bracteae florales oblongae vel ovalo-ellipticae, 21–23 mm longae, marginibus glandulosae; pedicelli 5–7 mm longi; bracteolae oblongo-oblancheolatae, 12–14 mm longae, marginibus glandulosae. Calyx glaber, hypanthio dense glanduloso; limbus campanulatus, lobis calloso-incrassatis. Corolla 19 mm longa. Stamina 17 mm longa, filamentis alternatim 2.5 mm et 6 mm longis, antheris tubulis inclusis alternatim 13 mm et 16.5 mm longis, poris 5–6 mm longis.

Epiphytic *shrub*; branches subterete or bluntly angled, slightly striate, glabrous, with scattered globular glands, reddish brown when dry. *Leaves* elliptic, (5–)7–11 cm long, 2–4 cm broad, basally obtuse or narrowly rounded, apically acuminate, sometimes abruptly short caudate-acuminate, reddish brown when dry, glabrous but with scattered, elevated, black globular glands 0.1 mm in diameter along the upper leaf surface, these often caducous leaving a reddish

TABLE 1. Comparison of *Cavendishia chiriquiensis* var. *chiriquiensis* and var. *bullata*.

	Var. <i>chiriquiensis</i>	Var. <i>bullata</i>	
	Boquete	Cerro Colorado	El Copé
Leaves	ovate; caudate-acuminate; 4.5–8 cm long; 3–5-plinerved, flat, not bullate	elliptic; caudate-acuminate; 4.5–6 cm long; 3–5-plinerved, 3 nerves usually impressed	lanceolate; caudate-acuminate; 7–9 cm long; 5-plinerved, 5 nerves deeply impressed
Inflorescence	6–9(–11)-flowered	(7–)10–12-flowered	9–11-flowered; but the lowest 2 nodes often sterile
Rachis	1.5–4.5 cm long; globular glands rare; sometimes flexuous	(2.5–)6–7.5 cm long; globular glands often dense in the basal 1 cm; nonflexuous	10.5 cm long; globular glands over the entire length; nonflexuous
Floral bracts (length)	15–25 mm	17–20 mm	20–26 mm
Bracteoles	linear to linear-lanceolate	oblong-ovate	ovate to oblong-ovate
Hypanthium	slightly apophysate	apophysate	apophysate
Calyx lobes	apiculate; entirely to nearly entirely callose thickened	0.5–0.75 mm; almost entirely callose thickened	1.5 mm; marginally callose thickened
Corolla	pubescent distal in the $\frac{1}{3}$	glabrous, rarely weakly puberulous in the distal $\frac{1}{3}$	glabrous

“punctate” scar, 5(–7)-plinerved, the innermost lateral nerves arising slightly above the base, the midrib and lateral nerves deeply impressed above and conspicuously raised beneath causing the leaves to be bullate, the veinlets slightly impressed above and raised beneath; petioles subterete, rugose, 3–5 mm long, 2.5–3 mm in diameter, hirsute, with globular glands 0.2 mm in diameter in the distal portion. *Inflorescence* viscid, ca. 20-flowered, the lowest few nodes sterile; rachis subterete, bluntly angled, striate, glabrous, at least 11 cm long (the upper portion still in bud) and 3 mm in diameter at the base, with globular or angular glands ca. 0.2 mm long scattered along its length; floral bracts oblong to oval-elliptic, glabrous, rose, basally narrowed, truncate and clasping, apically rounded, 21–23 mm long, 10–11 mm broad, marginally crisped and with 12–20 dark red globular glands 0.1–0.2 mm in diameter on each side; pedicels subterete, swollen distally, striate, glabrous, 5–7 mm long, 0.75 mm in diameter, with globular glands concentrated at the distal swollen portion; bracteoles oblong-obovate, 12–14 mm long, 6–8 mm broad, located midway along the pedicel and clasping or nearly concealing the entire calyx and lower $\frac{1}{5}$ of the corolla at anthesis, the margins crisped and with dark red globular glands scattered along the edge. *Flowers* with the calyx glabrous, ca. 3.5–5 mm long, the hypanthium cylindrical, obscurely ribbed, 1.5–2 mm long, basally truncate, covered by globular or angular glands 0.2 mm in diameter, the limb spreading-campanulate, 2–3 mm long including the lobes, both covered by globular glands, the lobes broadly triangular, 1 mm long,

completely glandular callose-thickened the distal $\frac{2}{3}$, erect after anthesis, the sinuses flat to broadly rounded; corolla ca. 19 mm long, 4 mm in diameter, slightly narrowed distally, glabrous without but sparsely pilose within, pink, the lobes triangular, acute to obtuse, 1 mm long; stamens 17 mm long, the filaments distinct, alternately 2.5 mm and 6 mm long, the short filaments sparsely pilose dorsally at the distal tips, the long filaments densely pilose ventrally in the distal half, the anthers including the tubules alternately ca. 13 mm and 16.5 mm long, the thecae ca. 7 mm long, the dehiscence pores 5–6 mm long; style ca. 19 mm long, glabrous. *Berry* not seen.

TYPE: PANAMA. CHIRIQUÍ: E del sitio de presa en Fortuna, 6 Mayo 1976 *Mendoza* 338 (DUKE, holotype; PMA, isotype, not seen; photo NY).

In the key to *Cavendishia* from Panama (Wilbur & Luteyn, 1978), this new species would key closest to *C. chiriquiensis* but would have some characters of *C. panamensis*. Upon closer examination, however, it is seen to be phenetically most similar to *C. pseudo-stenophylla*, differing most conspicuously in its elliptic (not linear-elliptic) leaves, glabrous bracts and corollas, and shorter bracteoles and corollas. These four species form a close and distinct group within the genus and are restricted to the mountains of Veraguas and Chiriquí provinces (see also Luteyn, 1976, for further discussion of this group).

***Cavendishia quereme* (H.B.K.) Bentham & Hooker**

This species, recently collected in Panama, was known previously only from the Central Valley of Costa Rica and the region of Queremal in western Colombia. The Panamanian collections are morphologically similar to the specimens from Costa Rica and Colombia.

Specimens Examined: PANAMA. CHIRIQUÍ: Camino a Soledad, SO del campamento Fortuna (sitio de presa) desde la region de la finca Pitti, *Correa et al.* 2211 (MO). Camino hacia la finca Landau, NE del campamento de Fortuna (Hornito), sitio de presa, 1100 m, *Correa et al.* 2365 (DUKE). Al este del sitio de presa en Fortuna, *Mendoza et al.* 112 (DUKE).

***Didonica panamensis* Luteyn & Wilbur, sp. nov.**

Frutex epiphyticus. Folia elliptica vel ovato-lanceolata, 4–7 cm longa, (1.5–)2–3.5(–5) cm lata, basi attenuato, apice acuminata. Inflorescentia axillaris, racemosa, floribus 3–4(–5); pedicelli 15–25 mm longi. Hypanthium ad pedicellum articulatum, 3–4 mm longum; limbus calycis 7–9 mm longus lobis inclusis; lobi apiculati, 1 mm longi. Corolla campanulato-cylindrica, 12–13 mm longa. Stamina 10, 12–14 mm longa; filamenta 4–5 mm longa; antherae 10–12 mm longae tubulis inclusis; tubuli 4.5–5.5 mm longi. Stylus 18–19 mm longus.

Epiphytic *shrub*, glabrous except for the filaments; mature stems terete or subterete, grayish brown, the bark adherent or exfoliating in thin longitudinal strips, the immature stems bluntly angled, reddish. *Leaves* elliptic to ovate-lanceolate, 4–7 cm long and (1.5–)2–3.5(–5) cm broad, basally slightly tapering and attenuate, apically acuminate, sometimes abruptly so, the margins obscurely and remotely crenate, each crenation tipped by a tiny reddish brown gland, abundantly provided beneath with minute glandular fimbriae arising from concave depressions in the leaf surface, 3(5)-plinerved, the midrib conspicuously impressed above, elevated beneath, the lateral nerves arising slightly above the base and slightly elevated on both surfaces; pseudostipules ca. 1.5 mm long; petiole subterete, rugose, 6–12(–15) mm long, 2–3 mm wide, flanked the entire length by

the attenuate leaf blade. *Inflorescence* axillary, racemose, 3–4(–5)-flowered; rachis subterete, striate, 3–6 mm long and 2 mm broad at anthesis but extending to 13 mm; floral bracts ovate, acuminate, 1.5 mm long, 1.5 mm broad, marginally glandular-fimbriate; pedicels terete, striate, 15–25 mm long, ca. 1 mm in diameter, expanding to 2 mm in diameter at the distal tip, articulate with the hypanthium; bracteoles ovate, sharply acuminate to awl shaped, ca. 1 mm long, ca. 1 mm broad, located $\frac{1}{3}$ of the way up the pedicel, marginally glandular-fimbriate. *Flowers* with the calyx 11–12 mm long, the hypanthium subcylindric or slightly spreading, slightly rugose, 3–4 mm long, ca. 4 mm in diameter, the limb spreading, somewhat campanulate, slightly rugose, 7–9 mm long including the lobes, 11–13 mm in diameter at the distal tip, the lobes barely differentiated, broadly ovate, apiculate, ca. 1 mm long, 6 mm broad at the base; corolla broadly campanulate-cylindric, 12–13 mm long, 12–13 mm broad, pale yellowish green, surface of the lower half drying smooth, the upper half slightly papillate, the lobes triangular, 3–4 mm long, 4–5 mm broad, erect; stamens 10, equal, 12–14 mm long, the filaments distinct, 4–5 mm long, marginally and dorsally long pilose and with glandular-fimbriate trichomes dorsally along the upper half of the filament and connective, the anthers including the tubules 10–12 mm long, slightly incurved at the base, the thecae minutely granular, 5.5–6.5 mm long, the tubules rigid, spreading, 4.5–5.5 mm long, dehiscing laterally by ovate-elliptic clefts 2–3 mm long, the inner surface moderately provided with apicular trichomes to 1 mm long; style glabrous, 18–19 mm long, exserted. *Berry* not seen.

TYPE: PANAMA. COCLÉ: Continental divide N of Penonomé on road to Coclesito between Llano Grande and Cascajal, in forest remnant, 1600 ft, 2 May 1979, *Hammel 7223* (MO, holotype).

Other Specimen Examined: PANAMA. COCLÉ: Continental divide ridge, Coclesito Road, *Hammel 2537* (MO).

Didonica panamensis is the second species in this recently described genus (Luteyn & Wilbur, 1977). Its stamens agree exactly with those of *D. pendula* Luteyn & Wilbur, the type of the genus, providing further support for this generic distinction. The new species differs significantly, however, from *D. pendula* in characters which modify the generic description: (1) the inflorescences of *D. panamensis* are racemose, being composed of 3–5 flowers, not of solitary flowers as *D. pendula*; (2) the pedicel and calyx of *D. panamensis* are articulate, not continuous as in *D. pendula*. Other specific differences are the shorter pedicels of *D. panamensis* (15–25 mm vs. 15–18 cm for *D. pendula*), and the glandular trichomes on the filaments and connectives of *D. panamensis*. The discovery of this new species has not, unfortunately, given us any new insight into the evolutionary relationships of *Didonica* with any other vaccinioid genus.

***Disterigma hammelii* Wilbur & Luteyn, sp. nov.**

Frutex epiphyticus; ramulis pilosulis. Petioli 0.5–1 mm longi, glabri; lamina coriacea, glabra integra, elliptica vel lance-elliptica, (4–)5–7(–8) mm longa, 1.5–2.2(–3.0) mm lata. Hypanthium glabrum, 1.5–1.8 mm longum, 1.0–1.4 mm diametro; lobi calycis 4, erecti, acuti, lanceolati, 2.5–3 mm longi, ciliati. Corolla subrosa; tubus cylindraceus, 10–12 mm longus, 2.5–3.2 mm diametro; lobi 4, reflexi, 2.2–3 mm longi, lanceolati, pubescenti. Stamina 8; filamenta 8–9 mm longa, antherae lanceolatae, papillatae 1.2–1.5 mm longae, tubuli antherarum 2, 2.5–2.8 mm longi.

Straggly epiphytic *shrub*; branchlets irregularly ridged and grooved, the recent growth reddish brown and densely spreading pilosulose with tawny to reddish brown trichomes 0.4–1.0 mm long, the older growth dull brownish to grayish and only moderately pilosulose with hyaline to tawny trichomes; internodes short, almost all less than $\frac{1}{4}$ the length of the subtending leaves and usually 1–2 mm long. *Leaves* coriaceous, entire, elliptic to lance-elliptic, (4.0–)5–7(–8) mm long, 1.5–2.2(–3.0) mm wide, mostly about 2.5 times as long as wide, apically acute in general outline but the actual apex obtuse, gradually tapering basally into the petiole, glabrate on both surfaces and margins, rarely with a few appressed, reddish glandular trichomes on the lower surface, the midvein slightly elevated beneath but the venation otherwise indistinct, apparently dark green above and pale green beneath; petioles 0.5–1 mm long, glabrous or nearly so. *Inflorescence* of solitary flowers in the axils of foliage leaves, subtended by several (5–8) ovate to broadly elliptical, tawny to dull reddish brown, scarious bracts mostly to 0.8–1.2 mm long; bracteoles 2, broadly clasping, ovate to broadly oblong, broadly rounded apically, scarious, pale greenish to yellowish, striate, 2–2.7 mm long, borne just beneath and embracing the hypanthium; pedicels ca. 0.5 mm long and obscured from view by the bracts and bracteoles. *Flowers* with the hypanthium terete, campanulate to obconic, glabrous to sparingly pilosulose, pale greenish, 1.5–1.8 mm long, 1.0–1.4 mm in diameter, the calyx lobes 4, strongly ascendent, narrowly lanceolate, acute, with incurved margins, 2.5–3 mm long, entire, ciliate for the distal $\frac{1}{3}$ – $\frac{1}{2}$ but otherwise glabrous; corolla “pale pink,” the tube cylindrical, 10–12 mm long, 2.5–3.2 mm in diameter, nearly glabrous but usually with a few appressed glandular trichomes ca. 0.1 mm long just above the middle, the lobes 4, ascendent to more typically reflexed at maturity, 2.2–3 mm long, lanceolate, acute, distally spreading short-pubescent with hyaline trichomes; stamens 8, about as long or slightly longer than the corolla tube, the filaments 8–9 mm long, flattened, sparingly hyaline pilosulose with trichomes 0.2–0.6 mm long, the anthers lanceolate, the thecae minutely papillate 1.2–1.5 mm long, each tapering into a separate, slender tubule 2.5–2.8 mm long; style glabrous, exerted beyond the corolla tube, 13–14 mm long. *Berry* not seen.

TYPE: PANAMA. CHIRIQUÍ-BOCAS DEL TORO: Border trail along continental divide, ca. 5 mi NE of Boquete near Cerro Pate Macho above Palo Alto, 7100 ft, 23 May 1979, *Hammel 7390* (DUKE, holotype).

This species is named in honor of Mr. Barry Hammel who spent approximately 18 months collecting for the Missouri Botanical Garden in Panama. We are most appreciative of his special attention to the ericads during his botanical explorations.

Disterigma hammelii belongs to a small group of *disterigmas* which normally have a scandent, “wiry” epiphytic habit, short internodes, and narrowly lanceolate to nearly linear leaves less than 5 mm wide. This group ranges from western Panama to central Peru and includes *D. agathosmoides* (Weddell) Niedenzu, *D. weberbaueri* Hoerold, *D. panamensis* Standley, *D. luteynii* Wilbur, and *D. hammelii*. From this group the new species may be distinguished by its longer corolla and filaments, and by its exerted style.

The description of this species of *Disterigma* dramatically illustrates the impact of recent field work in Central America. A synopsis of the Central American

species was published seven years ago (Wilbur, 1974) summarizing all that was known of the genus in Central America at that time (three species, including one therein described as new). This is the third new species described since then and the sixth species that we recognize from Central America. We have seen a small, incomplete specimen from the "summit of Cerro Arizona, north of Santa Fé, Veraguas" (*Hammel 4742*, MO) which is undescribed. It has a 4-parted calyx and elliptic leaves about 20 mm long and half as wide lacking an apiculus. We await fuller material before formally describing it. A key distinguishing the six Central American species follows.

Key to the Central American Species of *Disterigma*

1. Lobes of the calyx and corolla 3; corolla deep red *D. trimerum* Wilbur & Luteyn
- 1'. Lobes of the calyx and corolla 4; corolla white or pale greenish.
 2. Thecae of anthers both emptying into a single tubule 1.5 mm long; leaves mostly more than 1 cm long and wide, with an apicule 1–2 mm long -- *D. utleyorum* Wilbur & Luteyn
 - 2'. Thecae of anthers each emptying into its own tubule 2 mm long or longer; leaves mostly 1 cm or less long and wide, nonapiculate.
 3. Leaf blades 4 mm wide or wider; calyx lobes eciliate; calyx tube 4-angled in cross-section; Guatemala, Costa Rica, Panama (Chiriquí) and northern South America *D. humboldtii* (Klotzsch) Niedenzu
 - 3'. Leaf blades 1.5–4.5 mm wide; calyx lobes ciliate; calyx tube terete or nearly so in cross-section; endemic to Panama.
 4. Calyx lobes 2.5 mm long or longer; corolla tube 10 mm long or longer; corolla lobes 2.2 mm long or longer; filaments more than 7 mm long; Chiriquí-Bocas del Toro, Panama *D. hammelii* Wilbur & Luteyn
 - 4'. Calyx lobes 2.5 mm long or less; corolla tube 6 mm long or less; corolla lobes less than 2 mm long; filaments less than 6 mm long; Panamá and Darién, Panama.
 5. Calyx lobes 2–2.5 mm long; leaves typically widest at or near the middle, usually linear, mostly ca. 4 times as long as wide; Darién *D. panamense* Standley
 - 5'. Calyx lobes 1.5–1.7 mm long; leaves typically widest decidedly above the middle, oblanceolate, mostly ca. 3 times as long as wide; Panamá *D. luteynii* Wilbur

***Lateropora tubulifera* Wilbur & Luteyn, sp. nov.**

Frutex ca. 1.5 m altus. Folia coriacea, elliptica, 2.5–3.8 cm longa, 1.2–1.8 cm lata; petioli glabri, 3–4 mm longi. Inflorescentia axillaris, corymboso-racemosa, 2–3 cm longa; bracteae ovatae vel oblongae, 1.5–2.5 mm longae, 1.5–2 mm latae, ciliatae; pedicelli 10–18 mm longi, glabri; bracteoli ciliati, 2–2.2 mm longi, 1.5–1.8 mm lati, ciliati. Hypanthium ad pedicellum articulatum, campanulatum, 5-angulatum, 3–3.5 mm longum, glabrum; lobi calycis 5, erecti, triangulares, acuti, glabri, 1.0–1.5 mm longi. Corolla urceolata, 3.5–5 mm longa, extus glabra, intus villosa; lobi corollae 5, triangulares, acuti, 1–1.2 mm longi, intus villosi. Stamina 10; filamenta 2–2.2 mm longa, supra pilosa; thecae granulosa, ca. 2.5–3.0 mm longae; tubuli ca. 0.8 mm longi.

Shrub 1.5 m tall; immature branchlets moderately thick, 2–2.5 mm in diameter, glabrous, dark purplish, striate to irregularly angulate, the mature branches grayish to brownish. *Leaves* coriaceous, elliptic, 2.5–3.8 cm long, 1.2–1.8 cm wide, apically acute to obtuse and acutely tapering to the base, entire with an elevated or slightly thickened margin, glabrous or glabrate beneath, indistinctly pinnately veined; petioles glabrous, 3–4 mm long, 2–2.5 mm wide, flattened. *Inflorescence* axillary, corymbosely racemose, (1–)3–5-flowered, 2–3 cm long; rachis 1–1.5 cm long, glabrous; bracts 3–4, broadly oblong to orbicular, basal, peduncular, short-ciliate, 1–3 mm long, ca. 1.5–2.2 mm wide; floral bracts ovate to oblong, 1.5–2.5 mm long, 1.5–2 mm wide, glabrous except for short cilia, slightly keeled and

short-apiculate, irregularly narrowly hyaline margined; pedicels slightly clavate, 10–18 mm long, medially ca. 1 mm in diameter, glabrous except for an inconspicuous fringe of glandular trichomes 0.2–0.4 mm long borne distally just beneath the sharply delimited disarticulation groove; bracteoles subopposite to alternate, ovate to oblong, 2–2.2 mm long, 1.5–1.8 mm wide, ciliate, irregularly hyaline margined, appressed, located in the lower proximal third. *Flowers* with the hypanthium campanulate, clearly 5-angulate in the lower half with 5 rounded ridges ascending between the calyx lobes, 3–3.5 mm long, 3–3.2 mm in diameter at anthesis, glabrous, disarticulating from the pedicel by a clearly marked groove, the calyx limb somewhat flaring or at least wider than the hypanthium, glabrous, 0.7–1.0 mm long, the calyx lobes 5, erect, deltoid, acute, 1.0–1.5 mm long, basally 1.8–2.2 mm wide, glabrous; corolla urceolate, 3.5–5 mm long, “pink,” externally glabrous, internally densely pilose to tangled villous in the distal half with white trichomes 0.6–1.0 mm long; corolla lobes 5, triangular, acute, 1–1.2 mm long, glabrous externally and densely tangled villous internally; stamens 10, the filaments flattened, 2.0–2.2 mm long, basally less than 0.5 mm wide, distally attached for about $\frac{1}{3}$ the length from just above the strongly incurved base to the thecae, densely pilose distally with white trichomes 0.5–1.2 mm long, the anthers conspicuously granular, 2.5–3 mm long including the strongly incurved base of $\frac{1}{4}$ – $\frac{1}{3}$ the length of the thecae but excluding the smooth, ca. 0.8 mm long tubules, dehiscing by a slit extending from the apex of the tubule to the pronounced basal curve.

TYPE: PANAMA. CHIRIQUÍ: Cerro Hornito, in cloud forest, 6000 ft, 8 May 1978, *Hammel 3069* (MO, holotype).

The specific epithet of this species refers to the tubules of the anthers which are at least twice as long as those of the other two known species. The leaf blades are less than 4 cm long and their smallness is in great contrast to the leaf blades of the other two species of this endemic Panamanian genus. A key to the genus follows.

Key to the Genus *Lateropora*

1. Calyx lobes 2–3 mm long, 4–5 mm wide basally; corolla lobes ca. 3 mm long; petioles 5–15 mm long; leaves 6–13 cm long, 4–9 cm wide *L. ovata* A. C. Smith
- 1'. Calyx lobes 2 mm long or less, 2.2 mm wide or less basally; corolla lobes less than 2 mm long; petioles 5 mm long or less; leaves 2.5–8.5 cm long, 1.2–4.5 cm wide.
 2. Leaves when young appressed strigillose beneath with trichomes 0.2–0.3 mm long; tubules of the anthers 0.3 mm long or less; leaf blades 3–8.5 cm long; Veraguas
..... *L. santafeensis* Wilbur & Luteyn
 - 2'. Leaves glabrous beneath; tubules of the anthers ca. 0.8 mm long; leaf blades 2.5–3.8 cm long; Chiriquí *L. tubulifera* Wilbur & Luteyn

***Macleania megabracteolata* Wilbur & Luteyn, sp. nov.**

Frutex epiphyticus. Lamina foliorum coriacea, elliptica, (5–)7–10(–12.5) cm longa, (2.7–)3–4.5 (–5.7) cm lata, apice acuta vel acuminata, basi cuneata vel rotunda, 5–7-plinervia. Inflorescentia axillaris, racemosa, 4–7 cm longa, floribus 4–7; bracteae oblongae vel spatulatae, 9–13 mm longae, integrae, ciliatae; bracteolae 2, ellipticae, acutae, 13–16 mm longae, ca. 5 mm latae; pedicelli articulati, 5–11 mm longi. Hypanthium angulatum, 5–7 mm altum; limbus calycis ca. 2 mm altus; lobi calycis 5, 3.5–4 mm longi, acuti, glanduloso-puberuli. Corolla 12–14 mm longa, glanduloso-puberula; tubus cylindricus, roseatus, 10–12 mm longus, 4.5–5 mm diametro; lobi 5, acuti, 2–2.5 mm longi. Stamina 10; filamenta distincta, 3–3.5 mm longa; thecae granulosa, ca. 3 mm longae; tubuli 2, 5–6 mm longi; pori obliqui introrsi, 0.6 mm longi.

Epiphytic *shrub*; stems strongly and coarsely ridged and grooved, glabrous or nearly so, brownish. *Leaves* coriaceous, elliptic, (5-)7-10(-12.5) cm long, (2.7-)3-4(-5.7) cm wide, basally rounded or broadly tapering, apically acuminate with the tip 1 cm or more long or acute, entire and slightly revolute, glabrous above or sparingly to moderately spreading short-pubescent or puberulent on the very base of the midvein, glabrate beneath with punctate depressions marking former trichome attachments or, especially in younger leaves, with minute, reddish brown appressed glandular trichomes 0.1-0.2 mm long, 5-7-plinerved, the secondary veins arising at or near the base with the midvein proximally prominently elevated and impressed distally while elevated beneath; petioles stout, rugose, 3-6 mm long, puberulous to glabrate. *Inflorescence* axillary, borne near the end of the branches, racemose, 4-7-flowered, the rachis, pedicels, bracts, calyces and corollas moderately provided with reddish brown appressed glandular trichomes 0.1-0.2 mm long; rachis striate or irregularly angled, 3-7 cm long, the lower 1.5-2 cm enveloped by ovate to oblong bracts 5-8 mm long; pedicels striate, 5-11 mm long, markedly broadened and articulate just beneath the hypanthium; floral bracts oblong to spatulate, 9-13 mm long, entire, apically rounded; bracteoles 2, borne just beneath the hypanthium, elliptic, acute, 13-16 mm long, ca. 5 mm wide. *Flowers* with the hypanthium basally strongly angulate or pentagonal from the prominently intersinal ridges in the lower half, 5-7 mm long, the calyx limb ca. 2 mm long, the 5 triangular deltoid calyx lobes 3.5-4 mm long, basally 3.2-4 mm wide, apically acute; corolla 12-14 mm long, the tube broadly cylindrical, roseate, 10-12 mm long, 4.5-5.5 mm in diameter, the lobes triangular-deltoid, acute, 2-2.5 mm long, reportedly pale greenish; stamens 10, the filaments distinct, 3-3.5 mm long, spreading short-pubescent with slender trichomes 0.2-0.4 mm long, the anthers coarsely granular, ca. 3 mm long, each with two completely separate cylindrical tubules 5-6 mm long opening by an apical, introrse oval cleft; style glabrous, the stigma punctiform. *Fruit* unknown.

TYPE: PANAMA. CHIRIQUÍ: E de la presa en Fortuna, 22 Feb. 1976, *Mendoza, Mendieta & Mayo 191* (DUKE, holotype; PMA, isotype, 2 isotypes to be distributed).

This is the third known species of *Macleania* found north of South America in which each anther sac terminates in a distinct tubule. The bracteoles of the two previously known species, *M. rupestris* (H.B.K.) A. C. Smith [including *M. glabra* (Klotzsch) Hoerold] and *M. talamancensis* Wilbur & Luteyn, are less than 4 mm long while those of *M. megabracteolata* are longer than 12 mm.

***Themistoclesia revoluta* Wilbur & Luteyn, sp. nov.**

Frutex epiphyticus. Lamina foliorum pinnatinervia, elliptica vel oblanceolata, 5-6.5(-7.5) cm longa, 9-14 mm lata, basi cuneata, apice obtusa vel rotundata, integra, revoluta, supra et subtus pubescentia; petioli 3-4 mm longi, puberuli. Racemi axillares, 5-10 cm longi; bractee 2.5-4 mm longae; pedicelli 0.9-1.6 cm longi; bracteoli appressi, 2-3 mm longi. Hypanthium ad pedicellum non articulatum, 5-angulatum, pubescens; limbus calycis 1-1.2 mm longus, lobi ca. 1 mm longi. Corolla 5-angulata, 8-9 mm longa; tubus glabrus, 5-5.5 mm longus; lobi erecti, 2.5-3 mm longi, ciliati. Stamina 10, 6-8 mm longa; filamenta ciliata, 1.5-2 mm longa; antherae 2.5-3 mm longae; tubuli antherarum 2, distincti, 5-6 mm longi. Stylus 8-9 mm longus, glabrus.

Epiphytic *shrubs*; stems ridged and grooved but becoming terete, light brown to dun colored, minutely puberulent or short-pubescent. *Leaves* spirally ar-

ranged, narrowly elliptic to oblanceolate, 5–6.5(–7.5) cm long, 9–14 mm wide, basally cuneate, apically obtuse to rounded, entire, strongly revolute, moderately to densely short-pubescent on both the upper and lower surfaces, sparingly to moderately beset with glandular, reddish brown, appressed trichomes 0.1–0.2 mm long, the venation pinnate, the midvein prominently impressed above and elevated beneath, the secondary and tertiary veins when dry elevated above and moderately so beneath; petiole dorsally compressed and grooved, 3–4 mm long, inconspicuously puberulous to short-pubescent. *Inflorescence* borne at distal tip of the branches, axillary, racemose, 10–16-flowered; bracts 6–8, basal, appressed, lanceolate to narrowly triangular, acute, 3.5–5 mm long, finely short-pubescent abaxially; rachis ridged or striate, 5–10 cm long, densely short-pubescent with hyaline trichomes 0.2–0.5 mm long; floral bracts 2.5–4 mm long, narrowly triangular to narrowly lanceolate; pedicels 0.9–1.6 cm long, nonarticulate with the hypanthium, sharply striate, moderately to densely spreading short-pubescent with the slender, hyaline trichomes 0.2–0.3 mm long; bracteoles appressed, narrowly triangular, acute, spreading short-pubescent, keeled, 2–3 mm long, usually medial or submedial, alternate. *Flowers* with the hypanthium obpyramidal, strongly 5-angulate or winged, the wings alternate with the lobes, moderately spreading short-pubescent throughout, ca. 5 mm long, ca. 5 mm in diameter at the apex, the calyx limb 1–1.2 mm long, the calyx lobes depressed-triangular, acute to apiculate, ca. 1 mm long; corolla pentagonal, narrowly 5-winged opposite the lobes, 8–9 mm long overall, the tube tapering from the base to the apex, glabrous, 5–5.5 mm long, the lobes erect, 2.5–3 mm long, sparingly ciliate along the midrib, strongly reflexed at anthesis exposing the stamens and style; stamens 10, 6–8 mm long, alternately slightly unequal, the filaments equal, 1.5–2 mm long, sparsely ciliate and glandular-fimbriate, the anther thecae 2.5–3 mm long, basally tapering into a short-setose appendix, closely coherent basally due to the interlocking of the antheridial grooves; tubules 2 per anther, separate, twice as long as the thecae or 5–6 mm long, tapering upward and opening by a slender introrse slit ca. 1.5 mm long; style 8–9 mm long, glabrous, the stigma punctiform. *Fruit* unknown.

TYPE: PANAMA. CHIRIQUÍ; Bajo-Fortuna, 19 Mar. 1976, *Mendoza, Mendieta & Mayo 258* (DUKE, holotype; PMA, isotype).

Additional Specimen Examined: PANAMA. CHIRIQUÍ: Desembocadura del Río Hornitos, *Mendoza et al. 239* (PMA).

This species is unlike any other Central American species of *Themistoclesia* in its narrow, strongly revolute leaves and long-pedicelled flowers borne in elongate racemes. It is most closely related to *T. cutucuensis* A. C. Smith from eastern Ecuador and adjacent Peru, but differs in its densely scabrous inflorescences (including rachises, pedicels, bracts and calyces); its strongly revolute leaves with longer petioles, pinnate venation, and tapering (not subcordate) bases; and in its glandular anther connectives. A key to the Central American species of *Themistoclesia* follows.

Key to the Central American Species of *Themistoclesia*

1. Staminal tubules 1 per anther with a single introrse cleft; hypanthium distinctly 5-winged; leaves apically obtuse *T. pentandra* Sleumer

